

determining whether the request hits a tag stored in the cache, and
if so, generating a single external transaction to read the requested data into the agent..

21. The method of claim 20, wherein the second determining step includes:
comparing address information of the data request with tags stored in the internal cache,
and
identifying a tag hit when the address information matches a stored tag.

Please add the following new claims:

- C1
B1
Q5
- 22. An agent comprising a transaction queue, the transaction queue further comprising a plurality of queue entries, each queue entry comprising:
an address field,
a first status field to store data associated with a first transaction based on the address field, and
another status field to store data associated with another transaction based on the address field.
23. A method of processing a data request within a processing agent comprising:
posting the data request internally within the agent,
determining whether the request hit the cache,
when the request misses the cache, posting a series of external transactions to fill a cache line with data associated with the data request, the external transactions directed to a data-line-sized data item identified by an address of the data request and to at least one other data-line-sized data item adjacent to the first data item.--

REMARKS

The application contains claims 1-23. In view of the foregoing amendments and following remarks, Applicants respectfully request withdrawal of all claims and allowance of the application.

CHITTOR DOES NOT ANTICIPATE ANY PENDING CLAIM

Claims 1-21 stand rejected under 35 U.S.C. § 102 (e) as anticipated by Chittor, et al., U.S.P. 6,061,764. Applicants request withdrawal of this rejection because Chittor fails to teach all elements of the pending claims.

Chittor Does Not Anticipate Claims 1-7

Consider claim 1, for example. Chittor neither teaches nor suggests an agent that is both:

- adapted to transfer data of a predetermined *data line length* in an external transaction, and
- having a plurality of cache entries, each entry sized to store multiple data line lengths of data.

The Office Action points to Chittor's agent 10 as supplying the necessary disclosure. While Chittor's agent 10 undoubtedly includes cache lines, Chittor says nothing about the size of those cache lines. Chittor certainly does not disclose cache lines that are sized to store multiple data line lengths of data, where a "data line length" represents the amount of data to be transferred in a single data transaction.

As described in Applicants' specification, a "data line length" is the largest increment of data that can be transferred in a single bus transaction. In past systems, cache entries had a cache line sizes that was identical to this data line length. See, specification, pages 1-2. Chittor's system appears to be organized using the same philosophy:

As is known, data is stored in memory 200 organized as cache lines. The size of a cache line typically relates to the largest increment of data that may be transferred in a single pipelined bus transaction. Chittor, Col. 2:34-37.

Thus, Chittor discloses a system in which internal cache entries have the same size as the largest increment of data available in a single bus transaction. Applicants' claim states that the internal cache entries can store multiples of this largest increment. Accordingly, Chittor does not anticipate claim 1. Claims 2-7 depend from claim 1 and, therefore, cannot be anticipated by Chittor.

Should the Examiner determine to maintain the rejection, it is hoped that any forthcoming office action will provide a clear explanation of how the Examiner interprets the language "data line length" and of which portions of Chittor's disclosure are believed to explain how cache lines within his agent are sized.

Chittor Does Not Anticipate Claims 8-10

Claim 8 finds support in the disclosure of FIG. 3. As the specification describes, a transaction queue (say, FIG. 1, 240) may include a plurality of queue entries, wherein each

entry (FIG. 3, 241.) may include an address portion 244, a status portion for a first transaction 245 and a status portion for a second transaction 246. This structure permits the transaction queue to manage external bus transactions sufficient to fill a cache line within the agent. Remember that an external bus can transfer only a predetermined amount of data in a single bus transaction (called the "data line length") and that the cache lines are sized to be multiples of the data line length. Therefore, multiple bus transactions are required to fill completely a single cache line.

Claim 8 recites:

A processing agent, comprising a transaction queue having a plurality of a queue entries, the queue entries each further comprising:

a primary sub-entry including an address portion and status portion, the status portion provided for a first external transaction of the agent, and

a secondary sub-entry including a status portion provided for a second external transaction.

Chittor has no disclosure corresponding to much of this subject matter. Chittor has no disclosure of an address portion, a first status portion or a second status portion. Although Chittor discloses a transaction queue 130 having entries generally, he provides no disclosure corresponding to the first or second sub-entries as claimed. Chittor certainly does not disclose the details provided by claim 8. Accordingly, Chittor does not anticipate claim 8.

Chittor Does Not Anticipate Claims 11-16

With respect to claim 11, Chittor fails to teach or suggest several elements of the pending claims. Claim 11 recites that the internal cache has entries each sized to store multiple data lines which, as described above with respect to claim 1, are not met by Chittor's disclosure. Chittor also does not describe any kind of transaction queue within agent 10. Chittor does disclose an inbound transaction queue 130 for a different agent (a special purpose MIOC 50) but that agent does not include cache entries sized to store multiple data line lengths of data. See, Chittor, Col. 4:35-37. Accordingly, Chittor does not anticipate claim 11 or claims 12-16, which depend therefrom.

Chittor Does Not Anticipate Claims 17-21

The office action rejects claims 17-21 without analysis, asserting that they merely are method claims corresponding to the apparatus claims of record. Not true. Claim 17 recites an

element of determining whether a data request hit an internal cache, an element that Chittor does not disclose. Claim 17 also recites an element of posting a sequence of external transactions in response to a cache miss. While Chittor discloses that a MIOC 50 may post a sequence of external transactions on the pipelined bus, the MIOC 50 has no internal cache. Thus, the MIOC does not issue those transactions based on a cache miss. Accordingly, claim 17 recites several features that are not disclosed by Chittor. Chittor does not anticipate claim 17.

The Office Action Omits Several Dependent Claims From Analysis

Several dependent claims recite elements that were ignored by the Office Action. Applicants cannot respond to the rejections to these claims because the basis for those rejections is unknown. Consider the following elements, for example:

- cache entries include a tag portion adapted to store address information [Claim 2],
- match detection logic for tag portions [Claim 3];
- control logic provided in communication with match detection logic [Claim 3];
- the total number of primary and secondary entries equals the multiple number of data line lengths provided in the cache entries [Claim 7];
- signal lines including a cache hit signal line and a tag hit signal line [Claim 13];
- comparing address information of the a data request with tags stored in the internal cache [Claim 18];
- identifying a cache miss with the address information does not match any stored tag [claim 18];

The Office Action makes no attempt to explain how Chittor discloses any of this subject matter. Applicants have reviewed Chittor and believe that it has no disclosure that anticipates the elements listed above. If the Examiner determines to maintain these rejections, Applicants respectfully request that any subsequent office action will explain the basis for such rejections expressly and will cite to the corresponding portions of Chittor that are believed to describe the claimed subject matter.

NEW CLAIMS

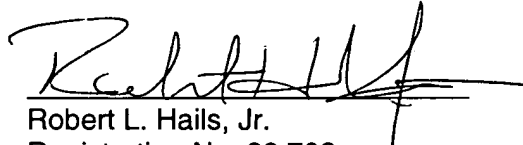
New claims 22-23 are directed to further embodiments of Applicants' invention. They, too, are allowable over Chittor.

CONCLUSION

Chittor does not anticipate any pending claim. Accordingly, Applicants respectfully request withdrawal of all outstanding rejections and allowance of the application.

Respectfully submitted,

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